REMARKS

Reconsideration is respectfully requested.

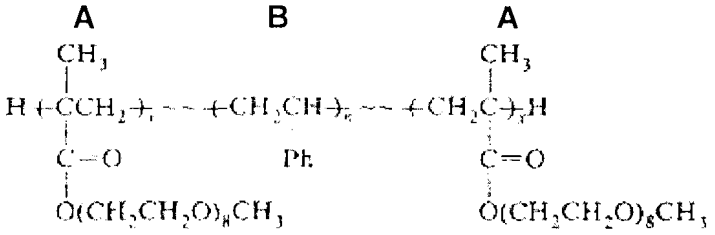
I. Status of the Claims

Claims 28 and 29 have been canceled without prejudice or disclaimer. Upon entry of this amendment, claims 1-27 are pending. No new matter has been added to the application.

II. Claim Rejections

A. Claims 1-27 have been rejected under 35 U.S.C. § 103(a) as being obvious over Khan et al. (Makromoleculare Chemie 1989, 190(5):1069-1078; "Kahn") in view of Giles et al. (U.S. Patent No. 5,196,484; "Giles"). Applicants respectfully traverse the rejection and request reconsideration

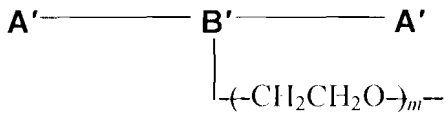
Khan discloses an ABA triblock copolymer consisting of two terminal blocks (**A**) of comb-like polymethacrylate with oligo(oxyethylene) side chains and a middle block **B** of polystyrene. The **A** blocks have ion-conducting activity, while the **B** block improves film-forming and mechanical properties. (*See* Kahn, Abstract.)



(TSG8)

Giles discloses an **A'B'A'** triblock copoloymer having a **B'/A'** block length ratio greater than 1. The **A'** block is a glassy polymer having a glass transition temperature above 70°C. The **B'** block is an elastomeric or amorphous polymer containing an ion-coordinating oxyalkane sequence, preferably $-(-CH_2CH_2O-)_m-$. Short oxyalkane sequences, i.e., low values of *m*, are desirable to

reduce ambient temperature crystallization. Alternatively, a plasticizer (such as DMTEG) may be added to the **B′** block. (*See* Giles, col. 1, line 65 to col. 2, line 12; col. 4, line 66 to col. 5, line 15.)

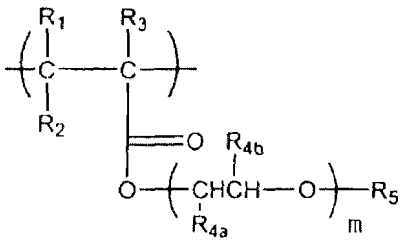


According to the Examiner, the only difference between Khan and the present invention is the sequence of the block chains A, B, and C. The Examiner's position is that it would have been obvious to one having ordinary skill in the art to place the **A** block in the middle of the Kahn **ABA** block (i.e., to form a **BAB** block copolymer) as taught by Giles in order to reduce ambient temperature crystallization. (Office Action, page 5, lines 3-8.)

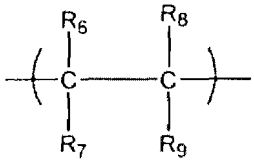
However, the recited motivation does not support the Examiner's position. Giles teaches that short oxyalkane sequences, i.e., low values of *m*, are desirable to reduce crystallization. Rearranging the Kahn **ABA** block to form a **BAB** block does not affect the length of the oligo(oxyethylene) chains of Kahn. Therefore, one having ordinary skill in the art would not rearrange the Kahn **ABA** block to reduce crystallization because the alleged reduction would not occur.

In fact, the rearrangement is contrary to the teaching of Kahn. Khan teaches that "the incorporation of a polystyrene block lowers the conductivity by an order of magnitude relative to that found for the homopolymer . . . The decrease in the amount of the conducting phase will of course lower the conductivity." (Kahn, p. 1076.) Rearranging the Kahn **ABA** block to form a **BAB** block will decrease the amount of the conducting phase (**A**) relative to the rigid phase (**B**) and lower the conductivity of the resulting copolymer, which is contrary to the desirability of high conductivity. "[W]hen the prior art teaches away from combining certain known elements, discovery of successful means of combining them is more likely to be nonobvious." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. ___, slip op. at 12 (2007).

Claim 1 recites a solid polymer electrolyte comprising an electrolyte salt and a copolymer, in which a block chain A of the copolymer containing the repeating unit



a block chain B containing the repeating unit



and a block chain C are arranged in the sequence B-A-C. Each of the variables in the above repeating units is as particularly defined. None of the cited prior art suggests this particular sequence of the recited repeating units or supplies any reasoning why one having ordinary skill in the art would construct such a solid polymer electrolyte. The obviousness analysis requires "determin[ing] whether there was an apparent reason to combine the known elements in the fashion claimed . . . To facilitate review, this analysis should be made explicit." *KSR*, 550 U.S. ___, slip op. at 14.

Furthermore, the superior conductive properties of the presently claimed solid polymer electrolyte is evidence of its nonobviousness over the prior art of Kahn and Giles. Kahn discloses Li^+ salt-complexed **ABA** block copolymers having an ambient conductivity in the range of 0.7 to 6.6 $x10^{-6}$ S/cm (even then, conductivities greater than $1.2x10^{-6}$ S/cm are only obtained by adding DMTEG to the **B** block). (Kahn, Table 4.) Giles discloses Li^+ salt-complexed copolymers whose ambient conductivity ranges from approximately $3.2x10^{-6}$ S/cm to approximately $4x10^{-5}$ S/cm (where the highest conductivity also results from adding glycol to the copolymer). (Giles, Figs. 1-8.)

In contrast, the presently claimed solid polymer electrolyte exhibits conductivities that are higher by an order of magnitude, from $5x10^{-5}$ S/cm to $1x10^{-4}$ S/cm (without having to add DMTEG or glycol). (*See* present specification, Examples 1-5.) Nothing in the teachings of Kahn or Giles would lead one having ordinary skill in the art to expect the results obtained.

B. Claims 28 and 29 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Nakanishi et al. (U.S. Patent No. 6,096,234).

Without conceding the appropriateness of the rejection, Applicants cancel claims 28 and 29 to advance prosecution of the remaining claims.

CONCLUSION

In view of the above amendments and remarks, Applicants believe the pending application is in condition for allowance. If there are any remaining issues that the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

By

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